Cycas desolata (Cycadaceae), a new species from north Queensland

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Summary

Forster, Paul I. (1995). *Cycas desolata* (Cycadaceae), a new species from north Queensland. *Austrobaileya* 4(3): 345–352. *Cycas desolata* sp. nov. is described and illustrated. Its affinities are discussed and notes are provided on its distribution, habitat and conservation status.

Key words: Cycadaceae, *Cycas desolata*

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Introduction

The genus *Cycas* L. in Queensland has recently been reviewed by Hill (1992). His account provided a useful, although only initial, regional analysis of a complex genus which facilitates the management of these plants in the light of ever increasing collector pressure and rural development. All but two of the Queensland species of *Cycas* are considered as rare or threatened plants (Forster 1994). There continues to be indiscriminate poaching of populations of horticulturally desirable species such as *C. megacarpa* K.D.Hill, *C. ophiolitica* K.D.Hill, *C. platyphylla* K.D.Hill and *C. cairnsiana* F.Muell., while many populations of some species still suffer from uncontrolled land clearing for agriculture and grazing.

In late 1993, Dr Rod Fensham of BRI brought to my attention a previously unrecorded population of *Cycas* plants north-west of Charters Towers in northern Queensland. In Hill's (1992) key this material (2 fronds) keyed to *C. cairnsiana*. According to Hill, *C. cairnsiana* is known principally from two localities, neither of which is near Charters Towers, hence this new population was of considerable interest because of its supposed conservation significance.

Investigation of this population in early 1994 revealed that the plants differed in several ways from *C. cairnsiana* and also from *C. platyphylla*, another closely allied species. This plant is described here as a new species, *C. desolata*. Descriptive terminology follows Hill (1992) enabling comparison with his descriptions.

Taxonomy

Cycas desolata P.I.Forst., **sp. nov.** affinis *C. cairnsianae* F.Muell. a qua cataphyllis lineari-lanceolatis, petioli frondis base dentes breves carentes, frondis pinnis paucioribus (90–136) plus minusve rectis longioribus latioribusque (180–210 × 3.8–5 mm), microsporophyllo spina apicali breviore (3–4 mm longa); megasporophyllo lamina minore late triangulari (28–32 × 20–25 mm) et spina apicali breviore (5–15 mm longa) differt. **Typus:** Queensland. North Kennedy District: North-west of Charters Towers, 27 Jan 1994, *P.I. Forster* 14671B [male] (holo: BRI [3 sheets + carpological material]).

Stem to 4 (rarely to 7) m tall, 15–25 cm diameter. Fronds 75–120 cm long, strongly keeled in section (opposing pinnae inserted at 30–50 degrees to the rhachis), with 90–136 pinnae; rhachis usually terminated by paired pinnae; petiole glabrous, 100–230 mm long; median pinnae at 40–50 degrees to the rhachis, 180–210 mm long, 3.8–5 mm wide, glabrous, glaucous, blue, flat in section, decurrent for 2–4 mm, narrowed to 2.8–4 mm at base (70–80% of

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maximum width), 1–5 mm apart on rhachis; midrib slightly raised above, prominent below. New growth densely tomentose with ferruginous trichomes, glabrescent. Cataphylls linear-lanceolate, 30–45 mm long, 2–4 mm wide, densely orange-brown tomentose at base. Microsporangiate cones elongate-ovoid, 240–400 mm long, 80–95 mm diameter. Microsporophyll fertile zone 20–26 mm long, 5–13 mm wide; sterile zone 8–12 mm long; apical spine sharply antrorse, 3–4 mm long. Megasporophylls 130–240 mm long, loosely ferruginous-tomentose at base only, otherwise glaucous blue, with 2–6 (usually 4) ovules; lamina broadly triangular, 28–32 mm long, 20-25 mm wide, irregularly sinuate or barely dentate with poorly developed teeth; apical spine 5–15 mm long. Seeds ovoid, 35–39 mm long, 32–35 mm diameter, green becoming yellow-purple when ripe, strongly blue pruinose. **Figs 1–6.**

***Additional specimens examined*:** **Queensland.** North Kennedy District: North-west of Charters Towers, May 1993, *Fensham* 1005 (BRI); ditto, Jan 1994, *Forster* 14671A, 14671C (BRI).

***Distribution and habitat*:** *C. desolata* is known from at least two populations of plants distributed sporadically over an area of c. 40 km^2 to the north-west of Charters Towers. Plants grow in woodland on shallow skeletal soil or on low rocky outcrops with *Eucalyptus erythrophloia* Blakely and an ironbark (either *E. crebra* F.Muell. or *E. xanthoclada* Brooker & A.R.Bean) dominant in the overstorey. At the time of my visit, the area was showing the effects of an extended period of drought, hence it was not possible to ascertain other taxa that would normally grow in association with *C. desolata*.

***Notes*:** *C. desolata* is closely allied to both *C. cairnsiana* and *C. platyphylla* but differs from both these species by a combination of characters (**Table 1**). Superficially, in terms of foliage coloration and pinnae margin morphology, it appears closest to *C. cairnsiana* and will key to that species in Hill's (1992) key. Both species have glaucous, light-blue to blue foliage, although the foliage of *C. cairnsiana* appears lighter in colour than that of *C. desolata*. *C. desolata* differs markedly from *C. cairnsiana* in the cataphylls linear-lanceolate, frond petiole lacking short teeth at the base, fewer pinnae on each frond (90–136), pinnae more or less straight and longer and broader (180–210 × 3.8–5 mm), microsporophyll with a shorter apical spine (3–4 mm long), megasporophyll lamina smaller and broadly triangular (28–32 × 20–25 mm) and with a shorter apical spine (5–15 mm).

The new species is unique in Australian species of *Cycas* with respect to the blue foliage, fronds without basal spines on the petiole, leaflet margins recurved, leaflet base gradually narrowing proximally, leaflets straight and relatively long (180–210 × 3.8–5 mm) and the small broadly triangular megasporophyll lamina.

C. desolata is a striking cycad because of the blue coloration of the foliage and the large size of some individuals. At the type locality I found one plant that exceeded 7 m in height (**Fig. 6**). Cycads of this height are rare in Queensland although *C. couttsiana* K.D.Hill is described as growing to 7 m and *C. megacarpa* to 6 m in height (Hill 1992). The male cones of *C. desolata* also appear to be unusually long when compared with those of other species from Queensland (data in Hill 1992), with maximum lengths of 20–25 cm given for *C. platyphylla*, *C. cairnsiana*, *C. angulata* R. Br., *C. couttsiana* and *C. brunnea* K.D.Hill. Some of these lengths may represent underestimations of cone size as I found cones up to 42 cm long on *C. platyphylla* at its type locality (Forster 14706B).

***Conservation status*:** *C. desolata* is a relatively common plant where it occurs as at least a thousand individuals were seen there by me. All presently known populations are on private land (Grazing Homestead Perpetual Lease) and are not under threat from the current landowner who wishes to remain anonymous and discourages visits by the public without permission. The exact locality for this species is thus not provided here in an attempt to restrict poaching of the population. *C. desolata* is an horticulturally attractive plant and because of potential threats to its existence from poaching together with the generally restricted distribution of the species, a conservation coding of 2V is recommended (cf. Briggs & Leigh 1988).

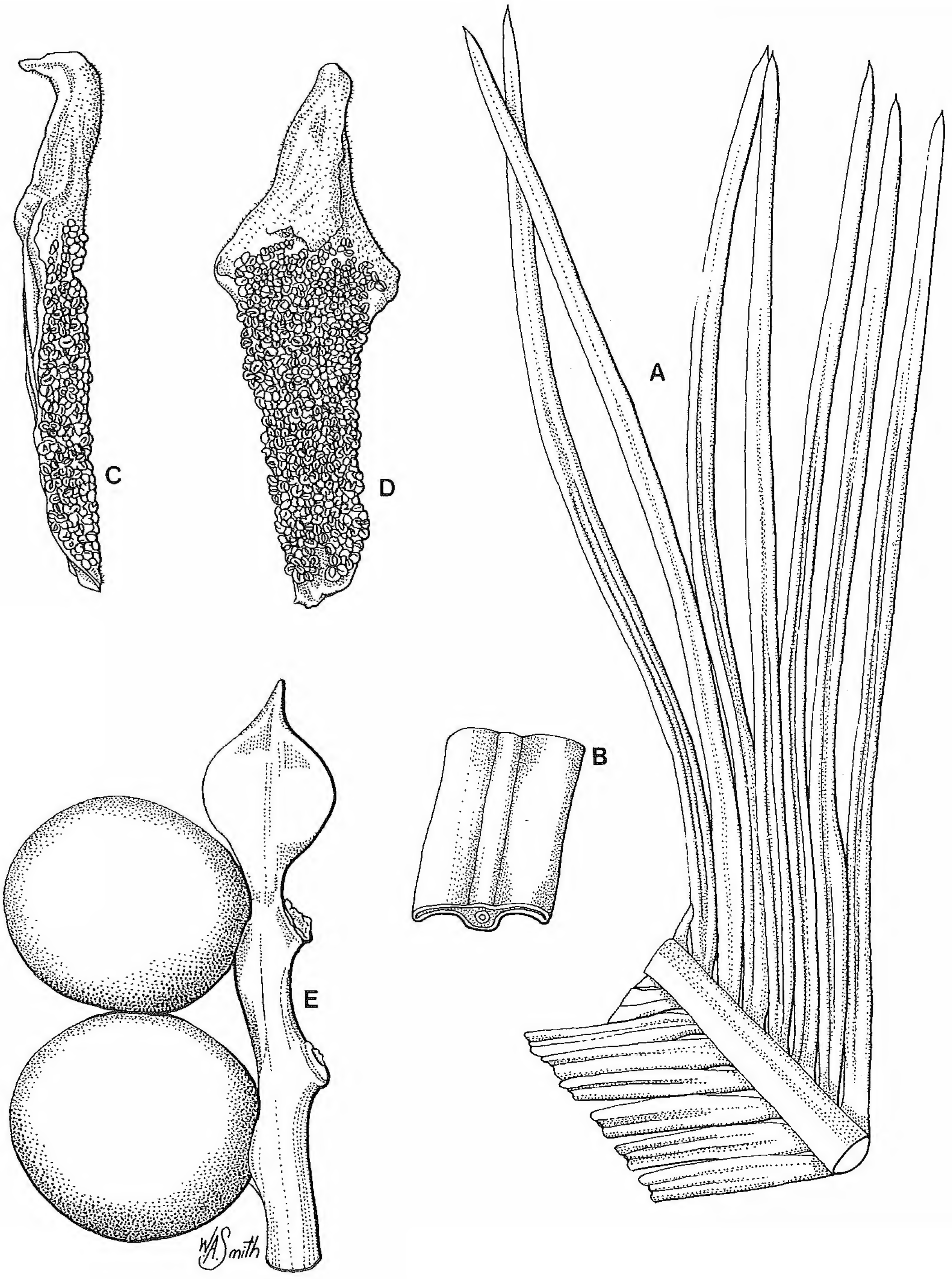

Fig. 1. *Cycas desolata*. A. part of frond × 0.8. B. section of pinnae × 4. C. lateral view of microsporophyll × 2. D. ventral view of microsporophyll × 2. E. megasporophyll × 0.8. A, B, E from *Forster* 14671A; C–D from *Forster* 14671B.

Table 1. Comparison of morphological characters for *Cycas cairnsiana*, *C. desolata* and *C. platyphylla*.

Character	*C. cairnsiana*	*C. desolata*	*C. platyphylla*
frond colour	glaucous light-blue	glaucous blue	glaucous blue becoming grey-green
cataphylls	lanceolate	linear-lanceolate	lanceolate
indumentum on cataphylls	base only	base only	all over
short teeth at base of frond petiole present (+)absent (-)	+	-	+
pinnae number in frond	180–280	90–136	120–260
pinnae ± straight (+) or antrorse (-)	-	+	-
pinnae margins	recurved	recurved	+ flat
median pinnae angle (degrees) to rhachis	20–60	30–50	45–60
median pinnae length × width (mm)	80–180×2.0–3.0	180–210×3.8–5	90–170×4.0–6.0
median pinnae base width (mm) (% of maximum width)	2.0–3.0 (80–100)	2.8–4 (70–80)	3.0–4.0 (65–85)
microsporophyll sterile zone length (mm)	12–15	8–12	7–10
microsporophyll apical spine length (mm)	6–9	3–4	6–9
megasporophyll lamina length × width (mm)	40–70×15–25	28–32×20–25	50–80×16–37
teeth development on megasporophyll lamina	poor	poor	strong
megasporophyll lamina spine length (mm)	15–20	5–15	20–25
seed dimensions length × width (mm)	36–42×30–37	35–39×32–35	30–40×27–38

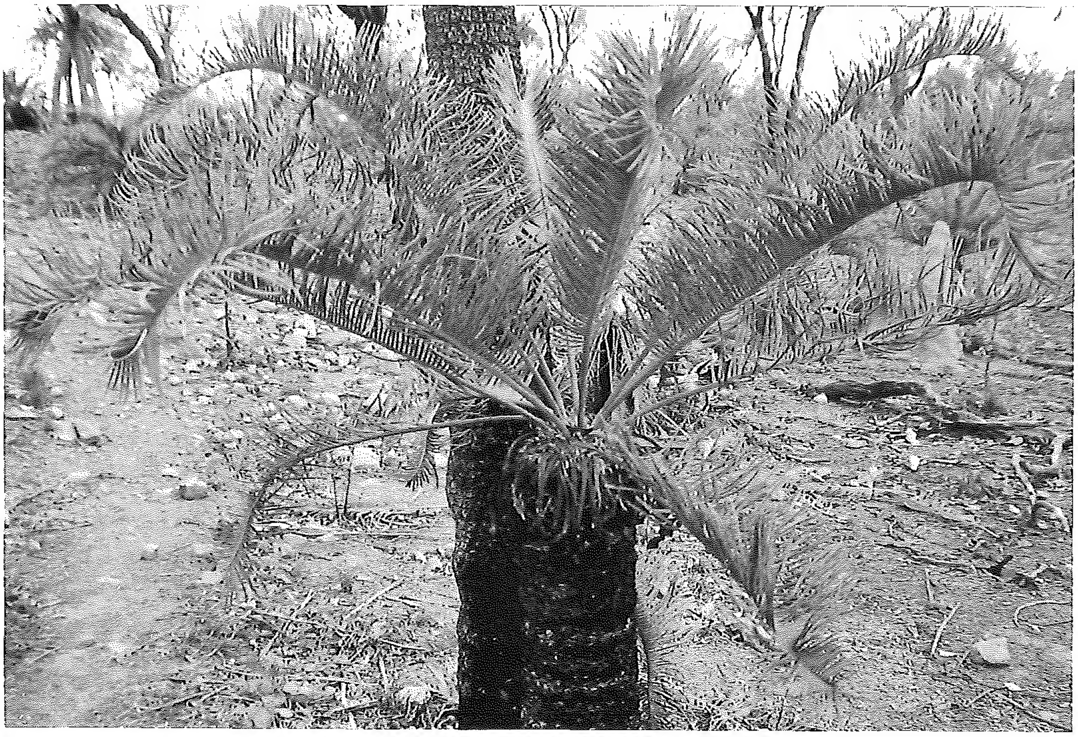

Fig. 2.*Cycas desolata*. Habit of mature plant at type locality.

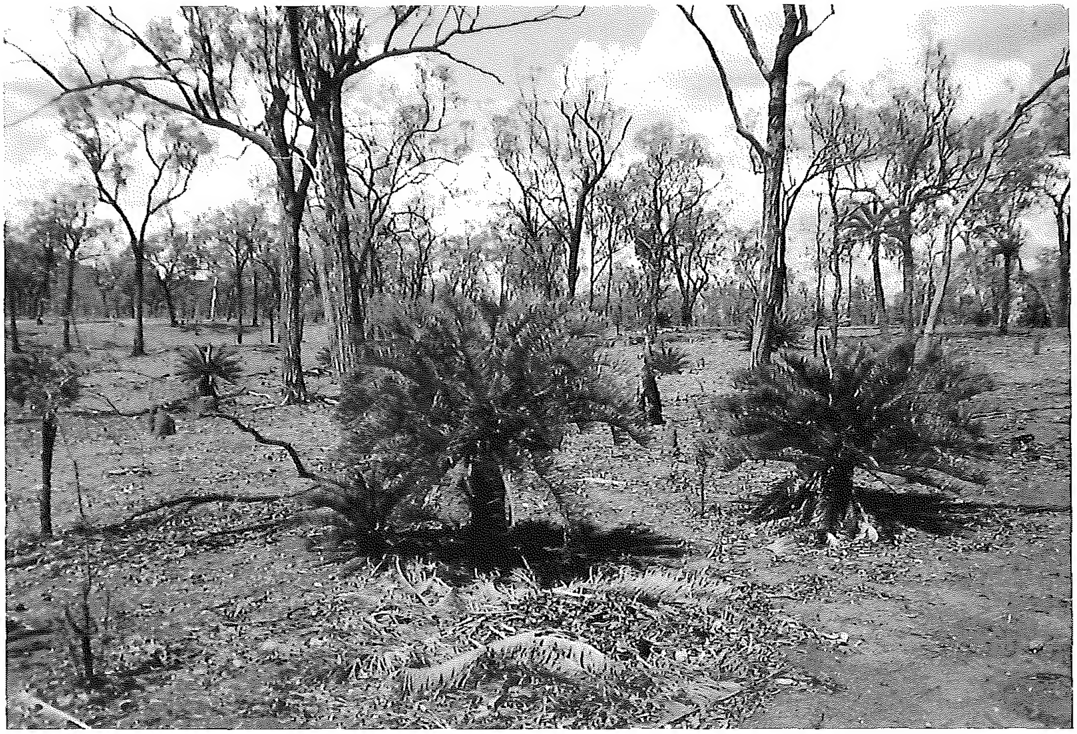

Fig. 3. *Cycas desolata* habitat.

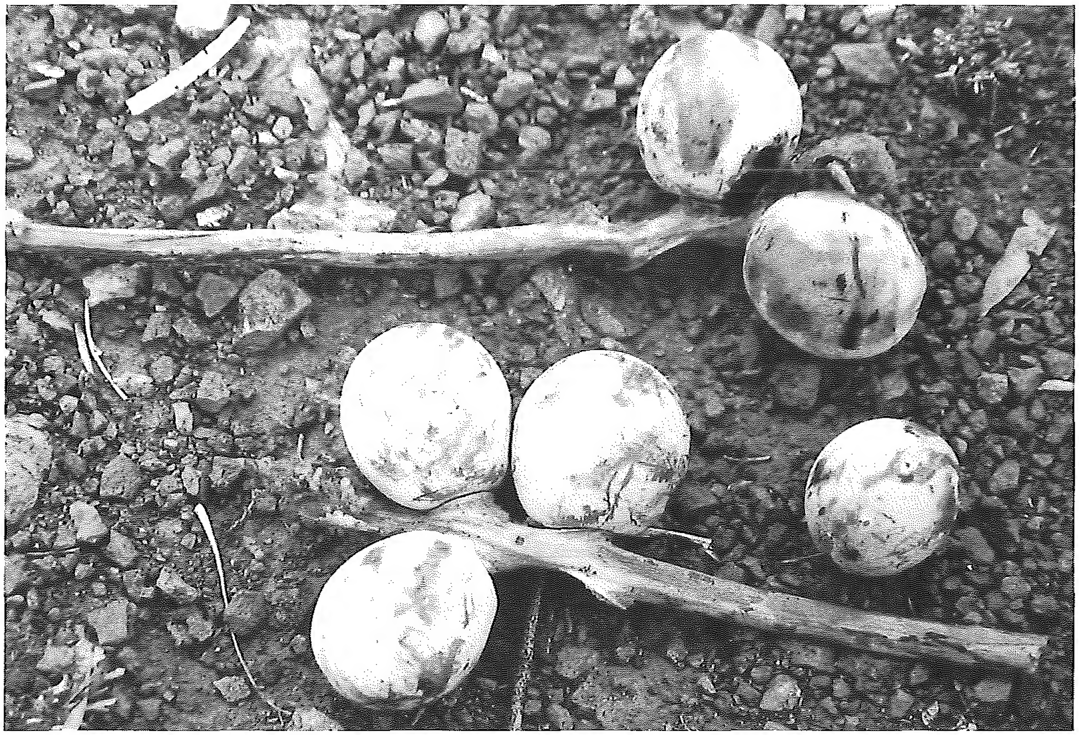

Fig. 4. *Cycas desolata.* Megasporophylls. (*Forster* 14671A).

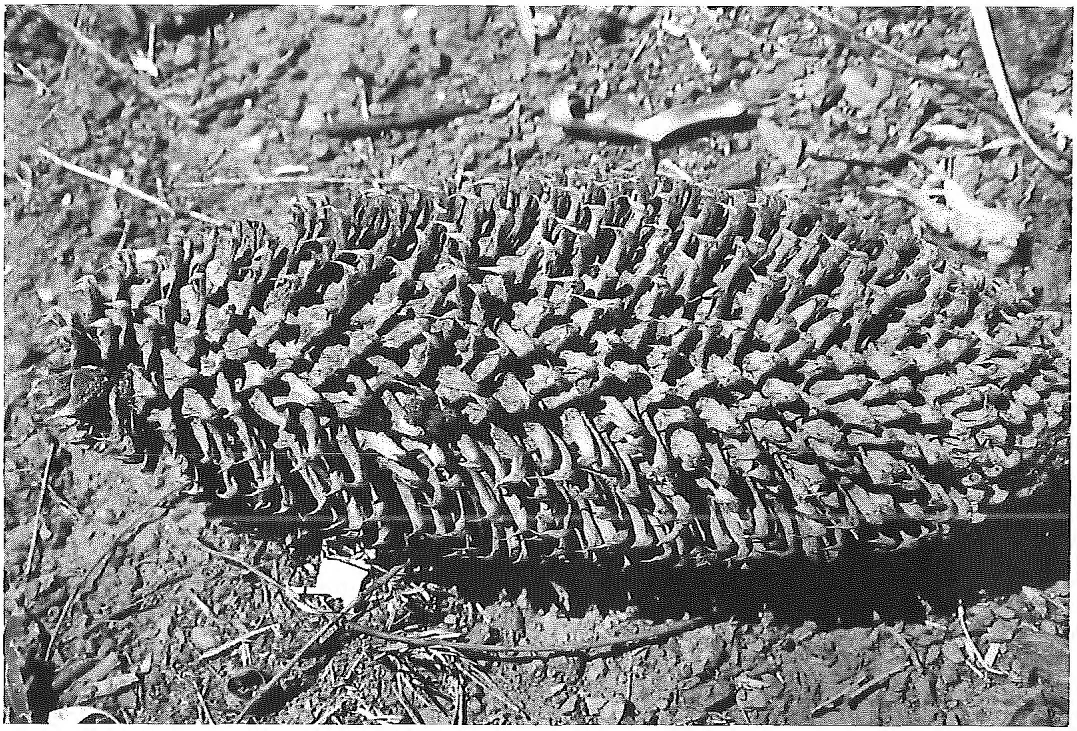

Fig. 5. *Cycas desolata.* Male cone. (*Forster* 14671B).

Etymology**:** The specific epithet refers to the 'ruinous or desolate' nature of the habitat where this plant occurs.

Acknowledgements

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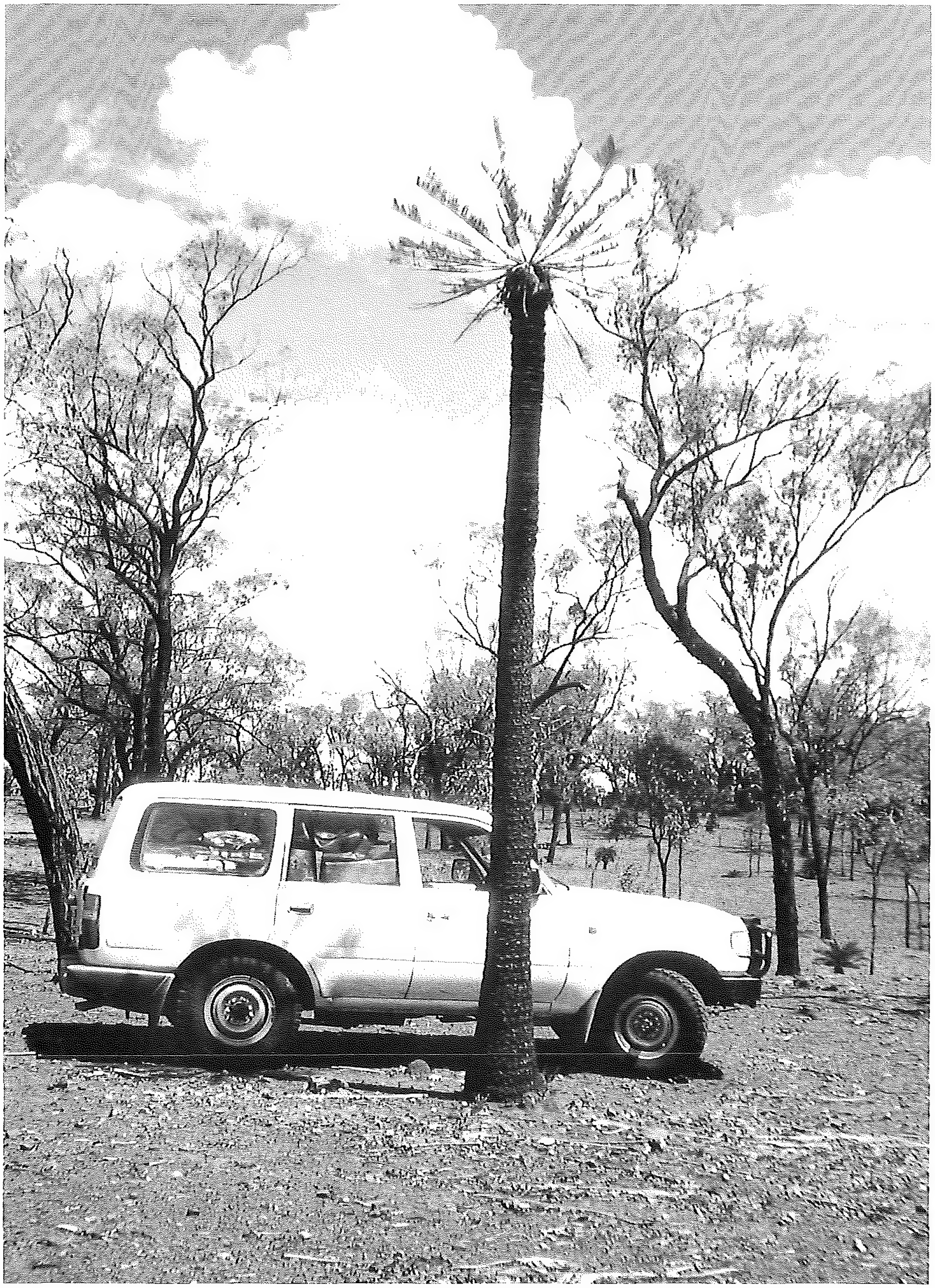

Fig. 6. *Cycas desolata*. The tallest plant seen.